HANDBOOK FOR ARIZONA COMMUNITIES
On Floodplain Management and the National Flood Insurance Program

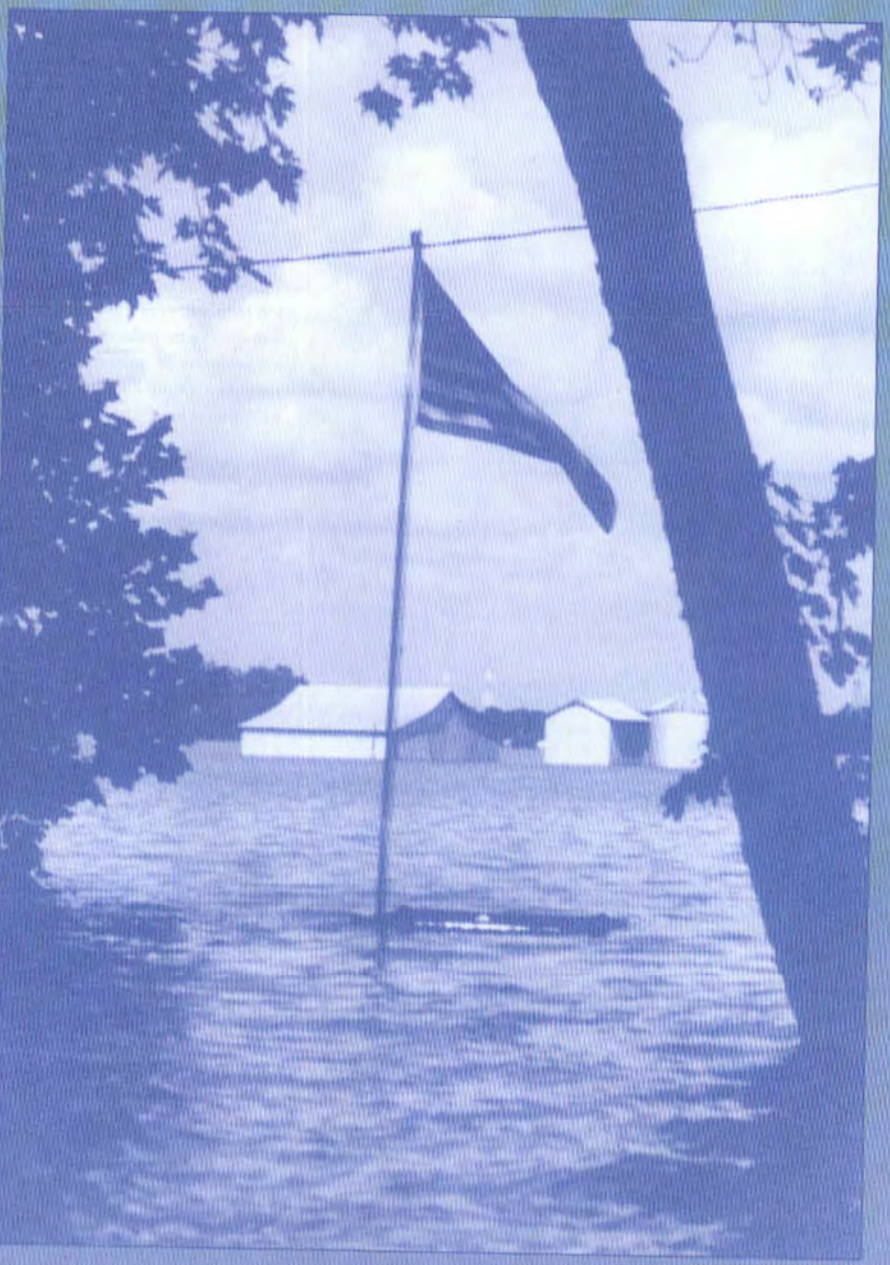
APPENDIX K

GUIDE TO FLOOD MAPS

FEMA 258 / May 1995
Supersedes FIA-14 / May 1988

How To Use a Flood Map To Determine Flood Risk For a Property

A guide for interested private citizens, property owners, community officials, lending institutions, and insurance agents



FEDERAL EMERGENCY MANAGEMENT AGENCY

FEMA ... Working for You

James Lee Witt
Director
Federal Emergency Management Agency

The mission of the Federal Emergency Management Agency (FEMA) is to provide leadership and support to reduce loss of life and property and to protect our institutions from all types of hazards. This is accomplished through a comprehensive, risk-based, all-hazards emergency management program consisting of mitigation, preparedness, response, and recovery.

To accomplish this mission, FEMA's Mitigation Directorate developed a national mitigation strategy. Hazard identification and risk assessment are the foundations of this strategy. Among the tools FEMA uses in implementing this strategy are the Flood Maps. FEMA has conducted engineering studies and restudies throughout the United States, and has produced Flood Maps for more than 18,000 communities with flooding problems. The Flood Maps are vital in our work with State and local governments to mitigate the effects of flooding in their communities.

We are pleased to present this *Guide to Flood Maps* for your information and use. Using this *Guide* in conjunction with the Flood Maps can assist you in deciding whether a specific property is in danger from flooding and whether structures on that property should be insured against flood loss. We view this *Guide* as a clear illustration of FEMA's commitment to providing quality service to all users of Flood Maps, while remaining focused on our primary goals: identifying flood hazards nationwide; assessing the risks associated with those hazards; and working with our Federal, State, and local partners to mitigate future flood damage.

This version of the *Guide* is designed to be an informative and user-friendly publication that will keep citizens aware of the flood hazards that may affect them. We welcome your comments on the *Guide* and all our efforts to provide information on flood hazards and mitigation. For your convenience, the addresses and telephone numbers of our Regional and Headquarters Offices are provided at the end of this *Guide*. Let us know how we're doing ... we're here to serve you.

Table of Contents

Cover Credit: U.S. Coast Guard Photograph by Don Wagner

National Flood Insurance Program

For decades, the national response to flood disasters was generally limited to construction of flood-control works, such as dams, levees, and seawalls, and providing disaster relief to flood victims. This approach did not reduce losses nor discourage unwise development, and, in some instances, may have actually encouraged additional development. To compound the problem, the public could not buy flood coverage from insurance companies, and building techniques to reduce damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayer, the U.S. Congress created the National Flood Insurance Program in 1968. Their intent was to reduce future damage and to provide protection for property owners from potential losses through an insurance mechanism that allows a premium to be paid by those most in need of the protection.

The program is administered by the Federal Emergency Management Agency (FEMA). FEMA produces Flood Insurance Rate Maps that show areas subject to flooding. The flood risk information presented on the Flood Insurance Rate Maps is based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood-control works, and development.

Flood Insurance Rate Maps are often called "FIRMs" by people who use them on a regular basis; the term is an acronym for Flood Insurance Rate Maps. In this *Guide*, however, we will refer to the Flood Insurance Rate Map as a Flood Map.

What You Will Find on Flood Maps

To prepare the Flood Maps that illustrate the extent of flood hazard in a floodprone community, FEMA generally conducts engineering studies referred to as Flood Insurance Studies. Using the information gathered in these studies, FEMA engineers and cartographers delineate Special Flood Hazard Areas on Flood Maps. Special Flood Hazard Areas are areas subject to inundation by a flood that has a 1-percent or greater chance of being equaled or exceeded during any given year. This type of flood commonly is referred to as the 100-year, or base, flood. A 100-year flood is *not* a flood that occurs every 100 years. In fact, the 100-year flood has a 26-percent chance of occurring during a 30-year period ... the length of many mortgages. The 100-year flood is a regulatory standard used by Federal agencies, and most states, to administer floodplain management programs. The 100-year flood is used by the National Flood Insurance Program as the basis for insurance requirements nationwide.

A variety of information can be found on a Flood Map, including:

- ★ Common physical features, such as major highways, secondary roads, lakes, railroads, streams, and other waterways
- ★ Special Flood Hazard Areas
- ★ Base (100-year) flood elevations or depths
- ★ Flood insurance risk zones
- ★ Areas subject to inundation by the 500-year flood

The Flood Map for your community may also show:

- ★ Areas designated as regulatory floodways
- ★ Undeveloped coastal barriers

Documents Related To Flood Maps

The results of the Flood Insurance Study are also available in a technical document that provides information used for floodplain management. This is known as the Flood Insurance Study Report. Regulatory floodways and other floodplain management information may be shown on a separate Flood Map. This is known as a Flood Boundary and Floodway Map. It is distributed with the Flood Insurance Study report, but is not distributed as part of a standard map request.

The Flood Insurance Study report and maps can be reviewed at the community office responsible for floodplain management activities in your community. Copies of the report and Flood Maps may also be obtained from FEMA's Map Service Center.

What Flood Maps Can Help You Do

The Flood Map provides information that allows you to:

- ★ Identify Special Flood Hazard Areas
- ★ Identify the location of a specific property in relation to the Special Flood Hazard Areas
- ★ Identify the base (100-year) flood elevation at a specific site
- ★ Identify the magnitude of flood hazard in a specific area
- ★ Locate regulatory floodways
- ★ Identify undeveloped coastal barriers, where flood insurance is not available

Who Uses Flood Maps

FEMA distributes Flood Maps to a wide range of users. Private citizens, insurance agents and brokers, community officials, the lending industry, and Federal agencies all use the Flood Maps to assist them in understanding flood hazards.

Private citizens and insurance agents and brokers use the Flood Maps to locate properties and buildings and corresponding flood insurance risk zones. Community officials use the Flood Maps to administer floodplain management regulations and mitigate flood damage. Lending institutions and Federal agencies use the Flood Maps to locate properties and buildings and determine whether flood insurance is required when making loans or providing grants for the purchase or construction of buildings.

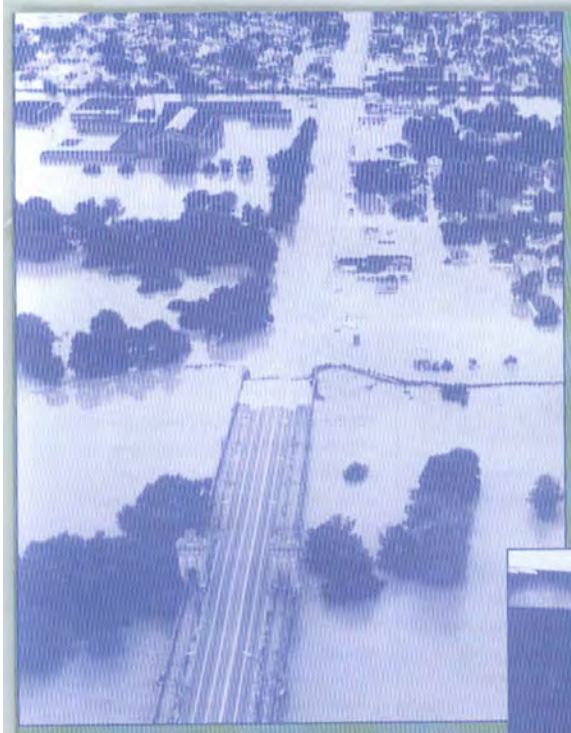
How To Obtain Flood Maps

The Flood Maps for your community should be available for review at your local community map repository site. Typically, this is your local planning, zoning, or engineering office.

If you would like copies of Flood Maps, they may be obtained from FEMA's Map Service Center. Because the Map Service Center maintains thousands of Flood Maps, you will need to give the Center's personnel specific information about the map(s) you want to order. See page 20 for ordering information and call 1-(800) 358-9616, or write:

Federal Emergency Management Agency
Map Service Center
P.O. Box 1038
Jessup, MD 20794-1038

Because floodwaters can endanger both life and property, it is vital to know where flood hazards exist.



Photograph from U.S. Coast Guard Archives

U.S. Coast Guard Photograph by Don Wagner

U.S. Coast Guard Photograph by Don Wagner

U.S. Coast Guard Photograph by Don Wagner

Key Map Elements

Since the National Flood Insurance Program began over 25 years ago, many improvements have been made to the design of Flood Maps so that they are easier to use and better meet users' needs. To control costs, FEMA includes design improvements in Flood Maps on a community-by-community basis as new Flood Maps are produced. As a result, all Flood Maps are not exactly the same. They may differ in format and content.

There are two basic Flood Map formats, differing in size and type of fold. In addition, Flood Maps are often produced at different scales. The most common scales are 1 inch = 500 feet, 1 inch = 1,000 feet, and 1 inch = 2,000 feet. The Flood Maps may include different types of jurisdictions. Some cover entire counties, divisions, or parishes (for purposes of this *Guide*, these will be referred to only as counties), while others cover individual communities or just parts of counties, divisions, or parishes. Many of the Flood Maps produced since January 1985 include floodway and floodplain management information that was not shown on older versions of Flood Maps. These newer Flood Maps also present simplified flood insurance risk zone designations.

In this section, the key elements common to all Flood Maps are described and illustrated. Keep in mind, however, that as a result of variations in format and content, all elements described here do not appear on every Flood Map.

Two Basic Formats Used for Flood Maps

The two basic formats you will find when you look at the maps are a "Flat Flood Map" and a "Z-fold Flood Map." These are described below.

- ★ A Flat Flood Map is one or more 11" X 17" pages and a cover sheet that includes an index (see Figure 1) and legend.
- ★ A Z-fold Flood Map, like a highway map, consists of one or more panels, each of which has a legend printed on it. Z-fold Flood Maps involving more than one panel also have an index.

Basic Elements of Flood Maps

In addition to two basic formats, Flood Maps also have several basic elements, which are described below.

The Index

If a Flood Map is composed of more than one panel, an index is provided. This index serves as a guide to the information found on the various panels and gives the map user a variety of information.

The Panel

The Flood Map for your community may include one or more individual pages, each of which is known as a panel. This simply means that the Flood Map for your community will not fit on one page, so there are several pages. The number of panels depends on the community size and the scale(s) of the Flood Map panels.

The Legend / Key to Map

Found on Z-fold Flood Maps, the legend provides additional information, including flood insurance risk zone definitions and notes for users.

The Title Box

Found on each panel (or page), the title box contains the community name, the panel number (page number), and other information necessary to identify the Flood Map panel correctly.

Some Flood Maps Cover Entire Counties

Most Flood Maps cover only one community. If that community is a county, flooding information is shown only for the areas under the jurisdiction of the county government. This means you will not find flooding information for incorporated areas (e.g., towns and cities) on the Flood Maps produced for most counties. Separate Flood Maps are prepared for incorporated areas.

More recently, however, FEMA has produced countywide Flood Maps. These Flood Maps show flooding information for all of the geographic areas of a county, including the towns and cities.

Figure 1

Index for a Flat Flood Map

How To Read the Flood Map Index

As mentioned earlier, if a Flood Map is composed of more than one panel, an index is provided. This index serves as a guide to the information found on the various panels. As shown in Figures 1, 2, and 3, the index shows the outline of the mapped community and the numbers and positions of the individual panels. The individual items included on the indexes are discussed below.

Seven items are found on all FEMA Flood Map indexes, regardless of the format or the area covered by the Flood Map. In addition to these seven items, other index items can be found on specific Flood Map formats as discussed below.

Found on All Flood Maps, Regardless of Format

Community Name

This tells you the mapped community, the community type (e.g., town, city, county), the county, and the state. When the mapped community is a county, the words "Unincorporated Areas" often appear below the county name. This indicates that the incorporated areas in the county are not covered by the Flood Map. When the Flood Map covers the entire geographic area of the county, the words, "and Incorporated Areas" appear after the county name.

Community Number

The community number is a six-digit identification number assigned to the mapped community. You need to use the community identification number when you ask FEMA staff questions about a Flat Flood Map or a Z-fold Flood Map for an individual community and when you order a Flood Map from the Flood Map Distribution Center.

Corporate Limit or County Boundary Line

This identifies the jurisdictional limits of the community's regulatory authority over land development and building construction. In some states, an incorporated community may exercise extraterritorial jurisdiction over land development and building construction in areas beyond its corporate limits. Where appropriate, these limits are shown and labeled on the index.

Continued

Panel Number/Community-Panel Number/Map Number

Different types of numbers appear on Flood Maps prepared in different formats. Each type of number identifies the panel that covers an indicated portion of the community. The following table shows the type of numbers that appear on specific formats.

Map Format	Type of Number
Flat Flood Map	Panel number
Z-fold Flood Map for Individual Community	Community-panel number
Countywide Z-fold Flood Map	Map number

How To Read the Flood Map Index

Inset Note
This note tells you if panels have not been created for particular areas of the Flood Map. These areas are shown as insets (i.e., small, separate portions of Flood Maps) on printed panels. The note identifies the panel on which the inset is shown (see Figure 3).

North Arrow
The north arrow orients the Flood Map.

Panel Limit Line
The panel limit line (see Figures 2 and 3) shows the extent of the area covered by each panel shown on the index.

Panel-Not-Printed Notes
These notes (shown in Figure 3) identify the panels included in the Flood Map layout that are not printed and explain why they are not printed. For instance, when a panel covers an area of the community that falls entirely in one flood insurance risk zone, that panel may not be printed, and an explanatory note is added to the index.

Found Only on Flat Flood Maps

Key to Map
This is the Flood Map legend that identifies the symbols on the Flood Map and provides information to assist users of the Flood Map, including explanations of the various flood insurance risk zone designations.

Notes to User
These notes (see Figure 1) provide important additional information about the Flood Map.

Found Only on Z-Fold Flood Maps

Effective or Revised Date
This is the date that Federal and community requirements for floodplain management regulations for the Special Flood Hazard Areas shown on the Flood Map take effect.

List of Printed Panels
This list identifies those panels that are printed out of the total number shown on the index.

Found Only on Countywide Flood Maps

List of Floodprone Communities
This listing (see Figure 3) shows:
- ★ All floodprone communities covered by the Flood Map
- ★ The community identification number for each community
- ★ The panels on which each community is shown
- ★ The initial identification date (the date that flood hazards were first identified)
- ★ "Post FIRM" date for each community (effective date of the first FEMA Flood Map for the community)

Found Only on Z-Fold Flood Maps for Individual Communities

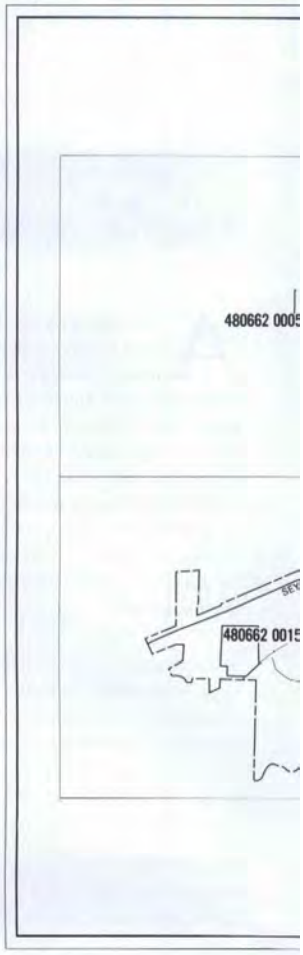
Community-Panel Number Range
This range, presented in the title box of the index, gives the lowest and highest panels in the layout of the Flood Map (see Figure 2). The panels are identified by 10-digit community-panel numbers.

Found Only on Newer Versions of Z-Fold Flood Maps

Floodprone Area Overview
Shown on some Flood Maps, this provides a generalized depiction of the Special Flood Hazard Areas shown on each panel. It helps you find the appropriate panel and orients you to the Flood Map. It should not be used in place of the more detailed delineations on the panels.

Floodprone Street Index
Shown on selected Flood Maps, this index lists the streets in the mapped community that are partially or completely in the Special Flood Hazard Area. It also indicates the panel(s) on which each street is shown. Grid coordinates that allow you to locate the street on the panel are listed for each street. The Floodprone Street Index may be shown either on the index or on a separate panel.

Map Repository Address
This is the address of the official community office where reference copies of the Flood Map and Flood Insurance Study report are stored and made available.



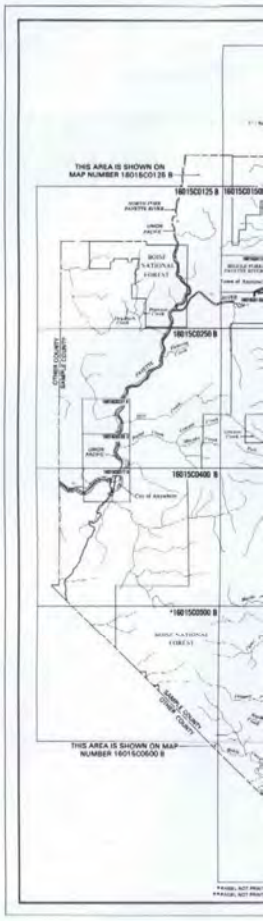


Figure 2

Index for a Z-Fold Flood Map for an Individual Community

Figure 3

Index for a Countywide Z-Fold Flood Map

How To Read the Flood Map Panels

As discussed earlier, when a Flood Map cannot be presented on one page, it is produced on several pages, known as panels. Flood Map panels depict the flood hazards in different parts of a community. As shown in Figures 4 and 5, each panel includes a title box that contains the name of the community, the panel number, and other information. Flood Map panels prepared in the Z-fold format also include a legend.

In this section of the *Guide*, you will find descriptions of the information found on the panels. Six items are found on all Flood Map panels. In addition to the items common to all panels, other items can be found on specific formats as shown on the map centerfold and discussed below.

Some Information Repeats from the Index

All panels, regardless of their format, include six items that also appear on the index. (See previous section for descriptions.) These are:

- ★ Community Name
- ★ Community Number
- ★ Panel Number/Community-Panel Number/Map Number
- ★ Corporate Limit or County Boundary Line
- ★ North Arrow
- ★ Effective or Revised Date

Found on All Panels, Regardless of Format

Area-Not-Included Label

This label (see centerfold map) identifies areas that are in the mapped area, but are not in the jurisdiction of that community; thus, no flood hazard information is shown on that Flood Map.

Base (100-Year) Flood Elevation Line and Label

For detailed-study areas, this line and label indicate the water-surface elevation of the base flood in relation to a standard set of geographic data in Special Flood Hazard Areas. A wavy line is used to show the base flood elevation when the base flood elevation varies along a watercourse. When the base flood elevation is uniform across a large area, a label is used. The base flood elevation is usually expressed in feet; for some communities, however, it is shown in meters. (See centerfold map.)

Coastal Barrier Symbol

This is a symbol that identifies undeveloped coastal barriers in the Coastal Barrier Resources System established by the Coastal Barrier Resources Act of 1982 and the Coastal Barrier Improvement Act of 1990 and other related information. These areas are identified because, as required by the 1982 and 1990 Acts, no new flood insurance coverage may be provided after specified dates for new or substantially improved structures on any Coastal Barrier in the System. (See centerfold map.)

Flood Hazard Area Designations

These designations appear as dark and light tints. Dark tints indicate areas of greater flood hazard; light tints indicate areas of lesser flood hazard. (Note: See page 13 for zone definitions.)

On flat Flood Maps and older Z-fold Flood Maps:

- ★ Dark-tinted areas are Zones A, AO, AH, A1-A30, A99, AR, AR/A1-30, AR/AH, AR/AO, AR/A, V, and V1-V30.
- ★ Light-tinted areas are Zone B.
- ★ Areas with no tint are Zone C or Zone D.

On newer Z-fold Flood Maps:

- ★ Dark-tinted areas are Zones A, AE, AH, AO, A99, AR, AR/AE, AR/AH, AR/AO, AR/A, V, and VE.
- ★ Light-tinted areas are Zone X (comparable to Zone B) .
- ★ Areas with no tint are Zone X (comparable to Zone C) or Zone D.

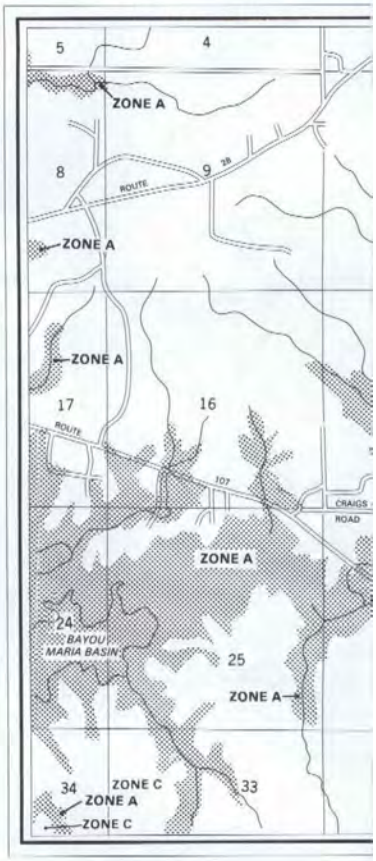
Floodplain Boundaries

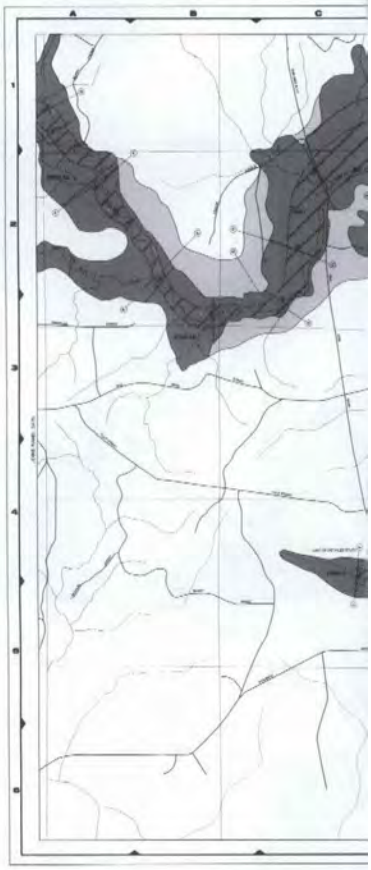
These boundaries show the limits of the 100- and 500-year floodplains.

Map Scale

This allows you to relate distances measured on the Flood Map to actual distances on the ground. The scales most commonly used for Flood Maps are 1 inch=500 feet, 1 inch=1,000 feet, and 1 inch=2,000 feet. The scale shown on a panel applies only to that panel, found only on Z-fold Flood Maps.

Continued on page 12





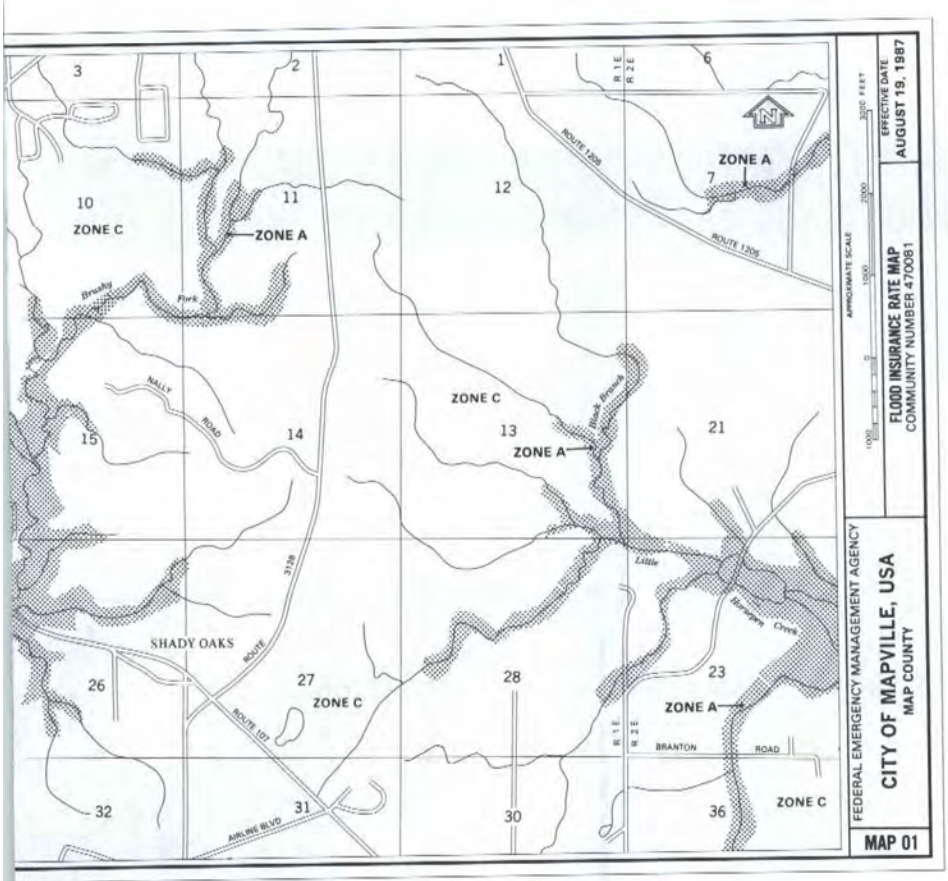


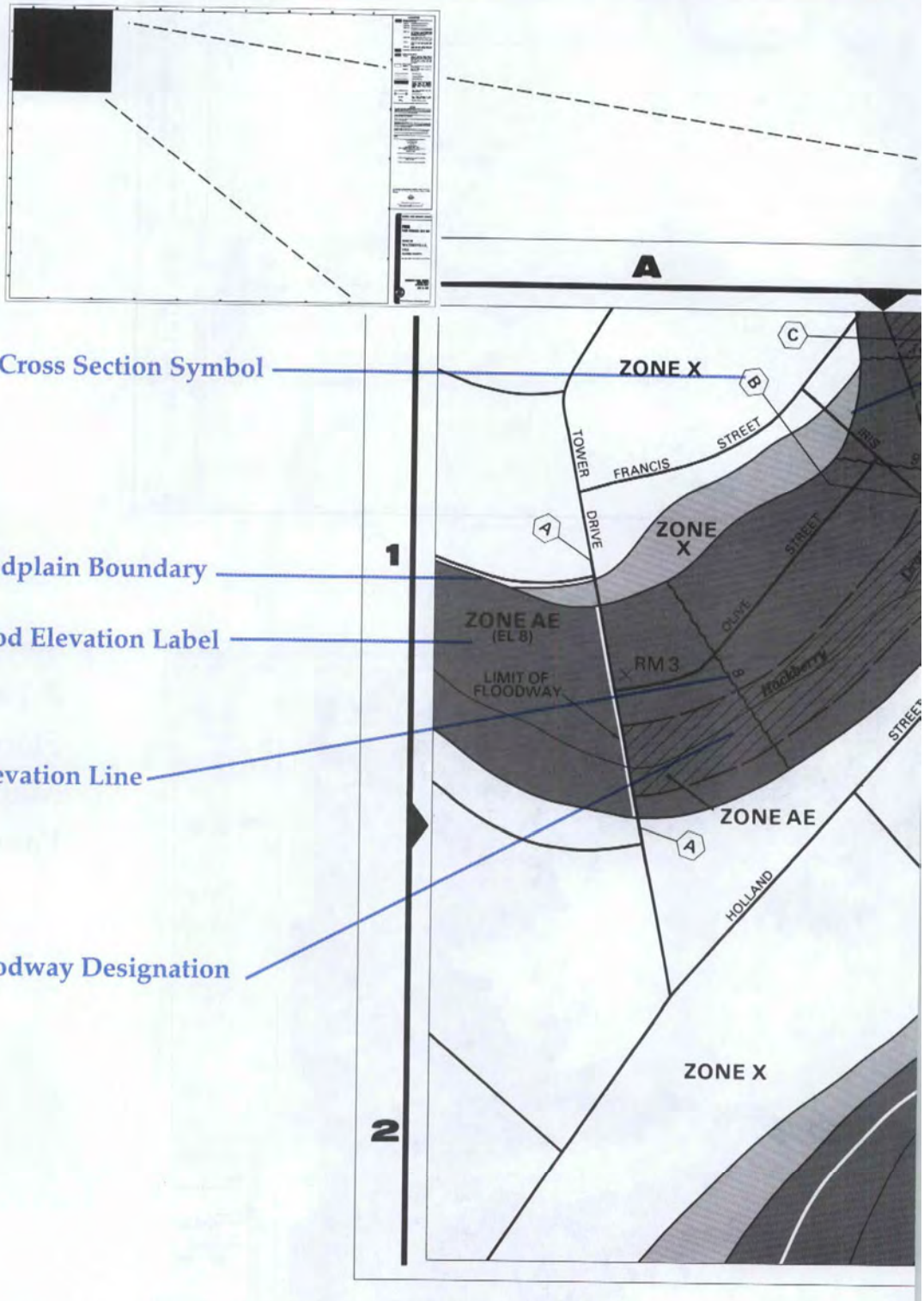
Figure 4

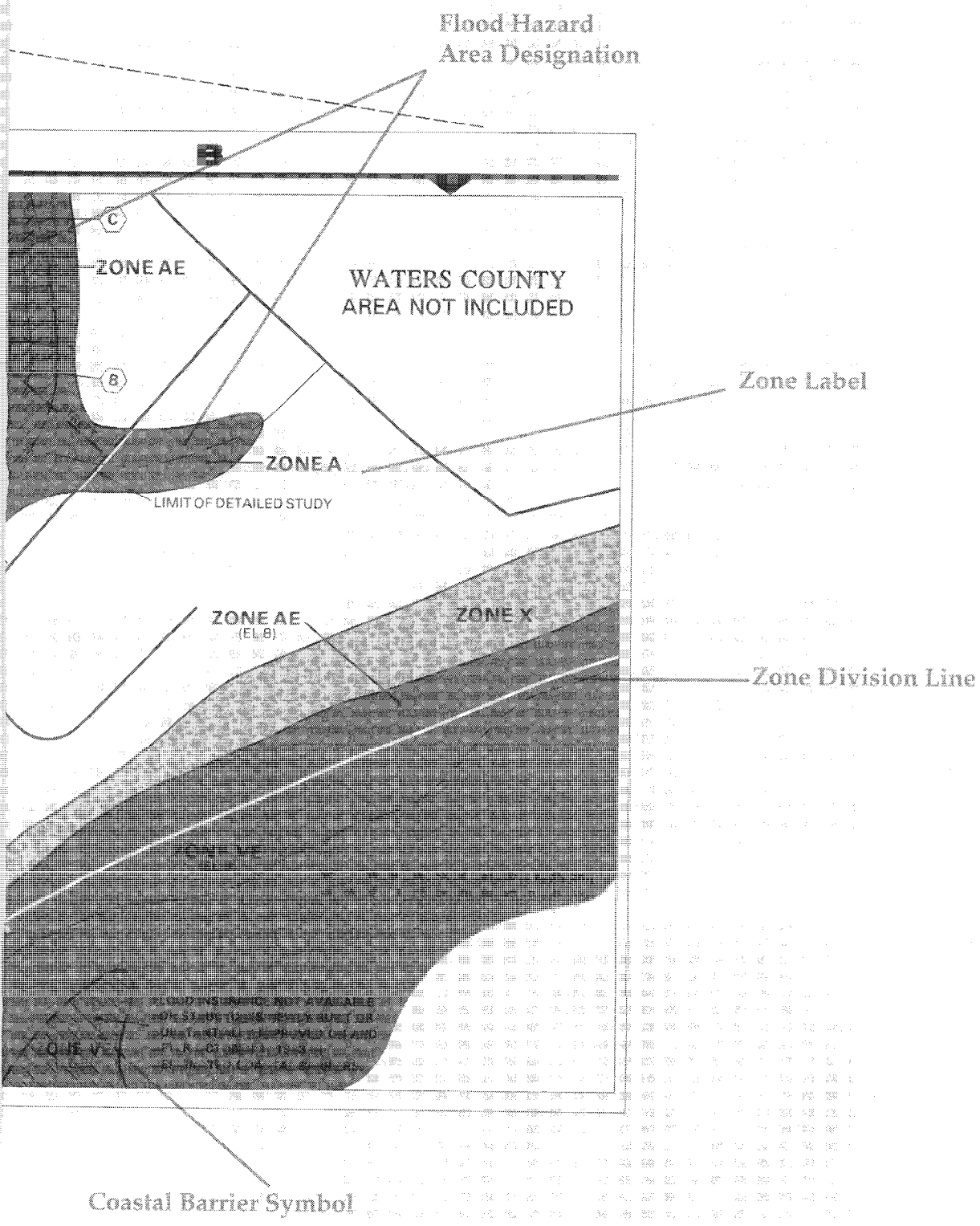
Flat Flood Map Panel

Figure 5

Z-Fold Flood Map Panel

How To Read the Body of a Flood Map




Flood Hazard Area Designation
C
ZONE AE
WATERS COUNTY
AREA NOT INCLUDED
B
Zone Label
ZONE A
LIMIT OF DETAILED STUDY
ZONE AE
(EL 8)
ZONE X
Zone Division Line
Coastal Barrier Symbol

How To Read the Flood Map Panels

Panel Number
This number identifies the panel. On different Flood Map formats, this number corresponds to different numbers as follows:

- ★ Flat Flood Map - Matches panel number on index
- ★ Z-fold Flood Map for Individual Community - Last four digits of community-panel number
- ★ Countywide Z-fold Flood Map - Last four digits of map number

River Mile Marker
This marker indicates the distance in miles from a reference point on a river or other major watercourse.

Stream Line
This line identifies the location of a watercourse. Narrower streams are usually shown by a single line, representing the approximate location of the stream centerline. Wider streams are often shown by double lines, representing the approximate streambank locations.

Zone Division Line
This line separates Special Flood Hazard Areas with different zone designations and separates Special Flood Hazard Areas with similar zone designations but different whole-foot base flood elevations in coastal Special Flood Hazard Areas.

Zone Label
This label identifies the flood insurance risk zone designation for a specific area.

Notes/Notes to User
As shown in Figure 5, these notes provide additional information to clarify zone designations on the Flood Map or use of the Flood Map.

Additional Items on Notice Z-Fold Flood Maps

Alpha-numeric Grid
This is the basis of the coordinate system established for the Floodprone Street Index.

Cross Section Symbol
This symbol shows locations of floodplain cross sections used for computing base flood elevations.

Floodway Boundaries
These boundaries show the limits of the regulatory floodways.

Floodway Designation
This designation identifies floodway areas. The floodway is the channel of a river or other watercourse plus any adjacent floodplain areas that are reserved so that the 100-year flood discharge can be conveyed without increasing the elevation of the 100-year flood more than a specified amount.

Map Repository Address
This is the address of the official community office where reference copies of the Flood Map and Flood Insurance Study report are stored and made available.

Panel Locator Diagram
This diagram shows the area covered by the panel in relation to the outline of the mapped community.

Additional Items on Z-Fold Flood Maps for Individual Communities

Community-Panel Number
As shown in Figure 6, this number identifies the panel; it corresponds to a community-panel number shown on the index. A letter suffix follows the number and usually indicates the number of times a particular panel has been revised.

Initial Identification Date
The date, appearing in the legend, when the flood hazards in the mapped community were first identified (see Figure 8).

Flood Hazard Boundary Map Revisions Chronology
This chronology lists effective dates of revised versions of the Flood Hazard Boundary Map (FHBM) for the community, if one was printed. (See Glossary of Terms on page 21 for a description of the FHBM.)

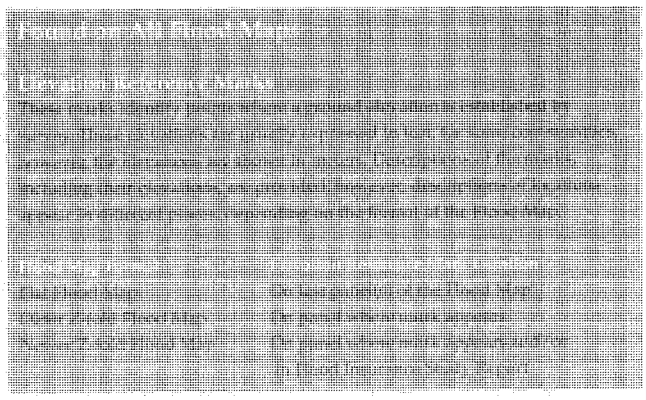
Map Effective Date
The date, appearing in the legend, that a Flood Map was first printed and became effective for the National Flood Insurance Program.

Map Revisions Chronology
This chronology lists the effective dates of *revised versions of the Flood Map*, if any, and briefly describes the reasons for the revisions.

Additional Items on Countywide Flood Maps

Effective Date of Countywide Map
The date on which the countywide Flood Map first became effective. Flood Maps may have been in effect for one or more of the individual communities in the county before the countywide Flood Map was published. If so, the initial Flood Map effective dates for each community will be shown as "Post FIRM Dates" in the List of Flood Prone Communities.

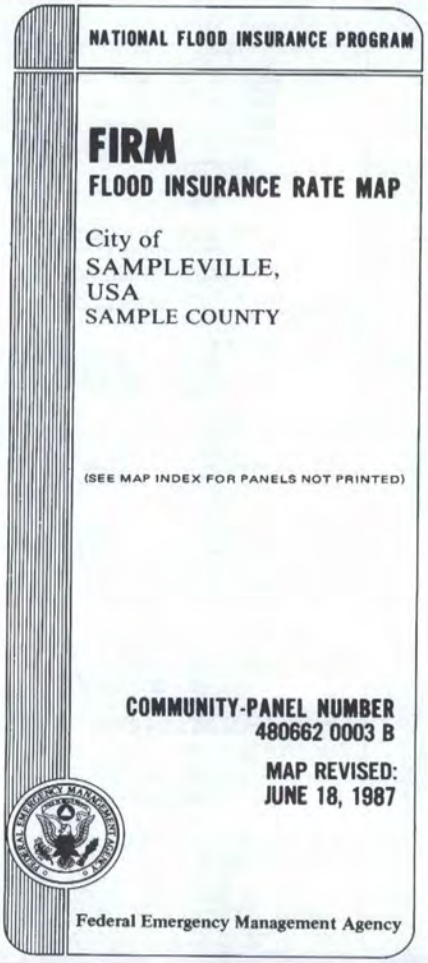
Map Number
This number identifies the panel. It is composed of a five-digit code that identifies the county; a letter "C" that indicates countywide mapping; and a four-digit panel number. After the countywide Flood Map becomes effective, the letter suffix can usually help determine the number of times a panel has been revised.



Getting Information from the Title Box

Figure 6

Title Box from a Z-Fold Flood Map for an Individual Community



Community Name

Community-Panel Number

Map Revised Date

Found on All Flood Maps

Flood Insurance Risk Zone Designations

The zone designations indicate the magnitude of the flood hazard in specific areas of a community. Following are the zone definitions:

Zone A
Special Flood Hazard Areas inundated by the 100-year flood; base flood elevations are not determined.

Zones A1-30 and Zone AE
Special Flood Hazard Areas inundated by the 100-year flood; base flood elevations are determined.

Zone AO
Special Flood Hazard Areas inundated by the 100-year flood; with flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths are determined. For areas of alluvial fan flooding, velocities are also determined.

Zone AH
Special Flood Hazard Areas inundated by the 100-year flood; flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations are determined.

Zone AR
Special Flood Hazard Areas that result from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection.

Zones AR/A1-30, AR/AE, AR/AH, AR/AO, and AR/A
Special Flood Hazard Areas that result from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection. After restoration is complete, these areas will still experience residual flooding from other flooding sources.

Zone A99
Special Flood Hazard Areas inundated by the 100-year flood to be protected from the 100-year flood by a Federal flood protection system under construction; no base flood elevations are determined.

Zone V
Special Flood Hazard Areas inundated by the 100-year flood; coastal floods with velocity hazards (wave action); no base flood elevations are determined.

Zones V1-30 and Zone VE
Special Flood Hazard Areas inundated by the 100-year flood; coastal floods with velocity hazards (wave action); base flood elevations are determined.

Zone B and Zone X (shaded)
Areas of 500-year flood; areas subject to the 100-year flood with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected by levees from the base flood.

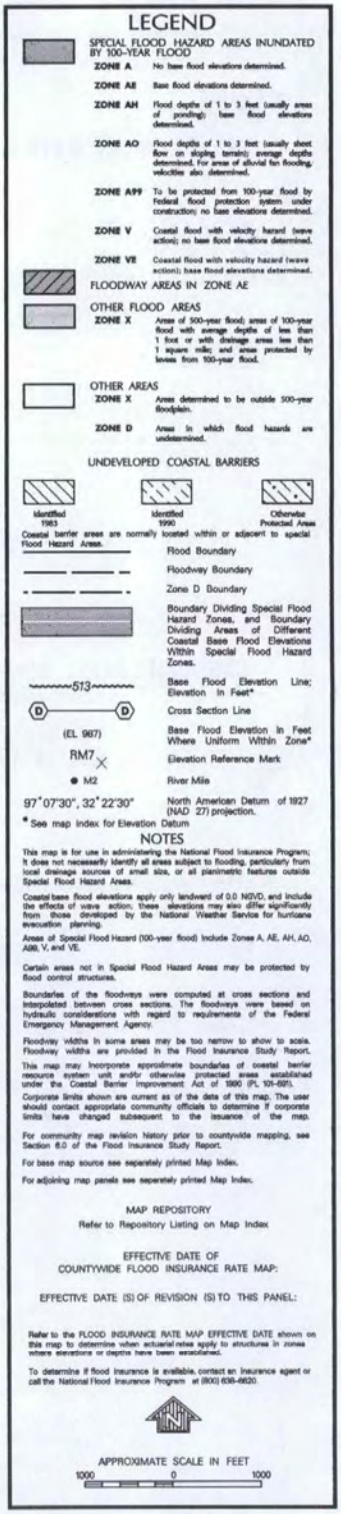
Zone C and Zone X (unshaded)
Areas determined to be outside the 500-year floodplain.

Zone D
Areas in which flood hazards are undetermined.

Legend Provides More Information

Figure 7

Legend from a Countywide Z-Fold Flood Map



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone*

RM7 — Elevation Reference Mark

M2 — River Mile

97°07'30", 32°22'30" — North American Datum of 1927 (NAD 27) projection.

* See map index for Elevation Datum

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action. These elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

This map may incorporate approximate boundaries of coastal barrier resource system unit and/or otherwise protected areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For base map source see separately printed Map Index.

For adjoining map panels see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
1000 0 1000

Some Flood Maps Include a Key to the Map

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations
100-Year Flood Boundary
500-Year Flood Boundary
ZONE B
ZONE B
Base Flood Elevation Line With Elevation In Feet**
513
Base Flood Elevation in Feet Where Uniform Within Zone**
(EL 987)
Elevation Reference Mark
RM7x
Zone D Boundary
River Mile
•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 AND VE.

Certain areas not in the Special Flood Hazard Areas (zones A and V) may be protected by flood control structures.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

For adjoining map panels, see separately printed Index to Map Panels.

INITIAL IDENTIFICATION:

FLOOD HAZARD BOUNDARY MAP REVISIONS:

FLOOD INSURANCE RATE MAP EFFECTIVE:

FLOOD INSURANCE RATE MAP REVISIONS:

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE IN FEET

1000 0 1000

Figure 8

Key to Map from a Z-Fold Flood Map for an Individual Community

Using the Flood Map To Get Specific Information

As we have seen, the Flood Map provides the information needed by private citizens, community officials, insurance agents, and the lending industry to assist them in:

- ★ Finding out whether a specific property is in a Special Flood Hazard Area
- ★ Identifying the flood insurance risk zone designation that applies to the property
- ★ Finding the base flood elevation at the property

In this section of the Guide, we present a step-by-step process that you may follow to obtain this information when you locate a property on the Flood Map. Our example is in the City Sampleville, Sample County, USA.

You are considering buying a new home on Water Street in Sampleville. Before you make any final decisions, you want to know whether this house could be flooded. To help you do this, you need to know if the property is in a Special Flood Hazard Area. If it is in the Special Flood Hazard Area, you also will want to find the flood insurance risk zone designation and base flood elevation that apply to the property to help you determine the appropriate insurance rate.

Step 1.
Find the Correct Panel

To find the panel that covers the property, you will refer to the index for the Sampleville Flood Map (see Figure 9). By reviewing the index, you learn that the Flood Map you need was prepared in a Z-Fold format composed of four panels. The index title box indicates that all four panels (0001, 0002, 0003, and 0004) are printed. According to the north arrow on the index, the Flood Map is oriented so that north is straight up.

You know that the property is on Water Street, which lies in the southeastern portion of the town, south of Interstate Highway 32. Although Water Street is not on the index, you determine from the north arrow and the major roads shown on the index that Water Street is on Panel 0004.

You then check the title boxes on individual panels to find Panel 0004 (see Figure 10).

Continued

Figure 9

Index from the Z-Fold Flood Map for Sampleville

Figure 10

Panel 0004 from the Z-Fold Flood Map for Sampleville

Step 2.
Find the General Location of the Property

Because the individual panel shows more roads and physical landmarks than the index lists, you use the panel to help locate the property. You know that the property is near the intersection of Oak Avenue and Water Street, and you can find that area on the panel (see Figure 11).

Generally, FEMA labels only major roads and the roads in or near floodprone areas on a Flood Map. To find the general location of the property, you may find it helpful to refer to another type of map that shows additional roads and physical landmarks in the community. You might try a city map, highway department map, or a tax assessor's map.

Step 3.
Find the Specific Location of the Property

To find the specific property location, you will use the Flood Map scale. In addition, you may refer to a plat map of the property, tax assessor's map, or the property description found on the deed.

You know the property lies on the northern side of Water Street, east of the intersection of Oak Avenue and Water Street. First, you find the dimensions of the property on a tax assessor's map or a plat map or in a legal description. Then, you convert the known dimensions to inches using the Flood Map scale and measurements on the Flood Map panel. For example, at the map scale shown for the map portion in Figure 12 (1 inch=500 feet), you will note that 250 feet on the ground is equal to 1/2 inch on the Flood Map, and 50 feet on the ground is equal to 1/10 inch on the Flood Map.

After looking at a plat map, you know the property line nearest Oak Avenue is 550 feet east of the centerline of Oak Avenue. At a map scale of 1 inch=500 feet, 550 feet is equal to 1-1/10 inches on the Flood Map. You also know that the property is 188 feet wide and 156 feet deep; on the Flood Map, those dimensions become approximately 3/8 inch by 5/16 inch. You can use the same method to locate the house.

Continued

Figure 11

Finding the General Location of the Property

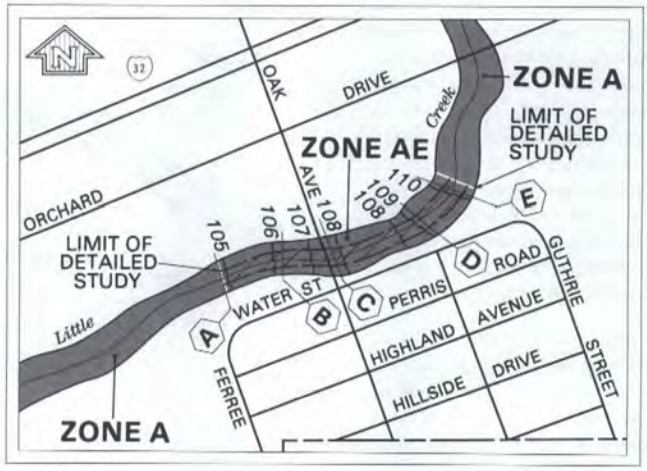
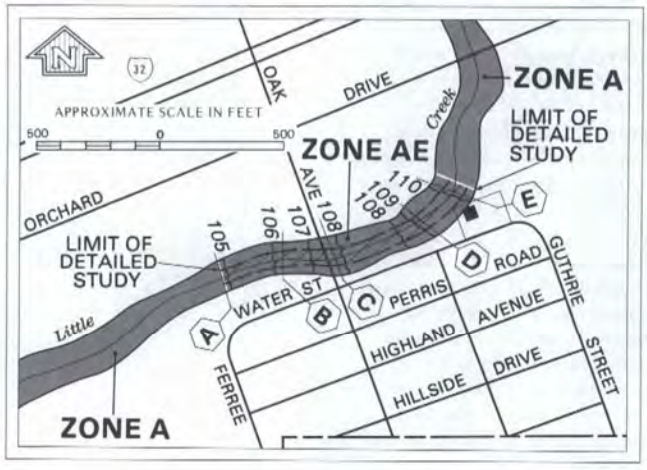


Figure 12

Finding the Specific Location of the Property



Step 4.

Identify the Flood Insurance Risk Zone Designation

As shown on the map in Figure 13, the property you are considering buying is partially in the dark-tinted Special Flood Hazard Area, and the building on the property is partially in the Special Flood Hazard Area. (Note: Current National Flood Insurance Program regulations indicate that if any portion of a building is in the Special Flood Hazard Area, the entire building is considered to be in the Special Flood Hazard Area.)

You can now identify the flood insurance risk zone designation for the property by finding the zone label. As shown in Figure 13, the Special Flood Hazard Area near the property is labeled Zone AE. The zone designation applies both to the portion of the property in the Special Flood Hazard Area and to any building on that portion.

Occasionally, when a property or building is close to the edge of the Special Flood Hazard Area, you may find it difficult to assess whether FEMA will consider the property or building to be in the Special Flood Hazard Area. The deciding factor in such instances is the elevation of the property or, in the case of a building, the land directly adjacent to the building compared to the base flood elevation (see Step 5). In the case of a property, when the lowest ground elevation is below the base flood elevation, FEMA determines the property to be in the Special Flood Hazard Area. When the elevations of the lowest floor (including the basement) of a building and/or the lowest grade adjacent to the building are below the base flood elevation, FEMA determines that the building is in the Special Flood Hazard Area. If the property or building is shown to be within the Special Flood Hazard Area on the Flood Map, only FEMA may determine that it is not in the Special Flood Hazard Area by comparison of these elevations.

The Flood Map for the City of Sampleville shows a floodway for Little Creek. As shown on the map in Figure 13, neither the property nor the building is in the floodway.

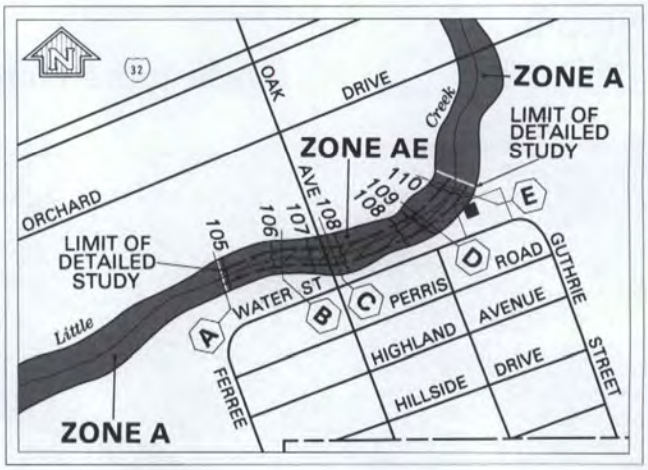


Figure 13

Finding the Flood Insurance Risk Zone Designation

Step 5.

Identify the Base Flood Elevation at the Property

To identify the base flood elevation, you find the base flood elevation lines (or labels) shown near the property on the Flood Map. As shown on the map in Figure 14, base flood elevation lines 109 and 110 are near the property, and 110 is the nearer of the two. When a property is between two base flood elevation lines, as in Figure 14, you may estimate the base flood elevation at the property by interpolating between the two base flood elevations. For an accurate elevation number, you refer to the flood profiles for the flooding source that appear in the Flood Insurance Study report for your community.

In Special Flood Hazard Areas designated as Zone A, no base flood elevations are shown. For help in determining an approximate base flood elevation in Special Flood Hazard Areas, consult community officials, such as your city or town planners or engineers or floodplain administrator, or you may contact your FEMA Regional Office. (See the back cover for addresses and telephone numbers of the FEMA regional offices.)

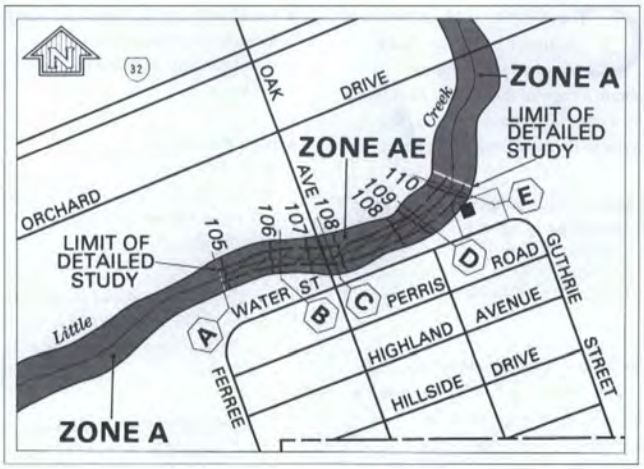


Figure 14

Identifying the Base Flood Elevation

How To Obtain a FEMA Flood Map

Copies of Flood Maps are made available by FEMA, and a nominal fee is charged. To obtain a copy of the current Flood Map for a specific community, you may write to the Map Service Center at:

Federal Emergency Management Agency
Map Service Center
P.O. Box 1038
Jessup, MD 20794-1038

You also may call the Map Service Center directly, at 1-(800) 358-9616, or transmit your map orders to 1-(800) 358-9620 by facsimile.

To facilitate your request, review the current Flood Map on file at the local community map repository and obtain the following information before you contact the Map Service Center:

★ Full name of the community shown on the Flood Map (including city, town, village; county; and state)

★ For a flat Flood Map, the community identification number and letter suffix that appear in the title box of the index

★ For a Z-fold Flood Map for an individual community, the community-panel number and letter suffix that appear in the title box of each panel

★ For a countywide Z-fold Flood Map, the Flood Map number and letter suffix that appear in the title box of each panel

Generally, for multiple-panel Flood Maps prepared in the Z-fold format, the Map Service Center will provide copies of specific panels rather than a copy of the entire Flood Map. Therefore, before you order, you should know the following:

★ A panel may not be printed for the portion of the community that interests you. If so, a note on the index will explain why.

★ The area that interests you may not be in the community whose Flood Map you are reviewing. A property's post office address may include the name of a nearby incorporated community even though the property is really in the unincorporated area of the surrounding county. Therefore, you may find it necessary to review the Flood Map for the county, which is available for review at the local map repository for the county.

★ Areas recently annexed by a community may not appear on the Flood Map for that community. To obtain flooding information for those areas, you should obtain the Flood Map for the community from which the areas were annexed.

★ If you cannot find a copy of the current Flood Map to identify the exact panel you need, you may request that the Map Service Center provide you with a copy of the Flood Map index. You can use this to identify the panel(s) you need.

Once you have obtained the necessary ordering information, you can contact the Map Service Center and place your order. On average, you will receive the Flood Map panels in 2 to 4 weeks.

Glossary of Terms

Base Flood
The flood having a 1-percent probability of being equaled or exceeded in any given year; also referred to as the 100-year flood.

Base Flood Elevation
The height of the base (100-year) flood in relation to a specified datum, usually the National Geodetic Vertical Datum of 1929 or North American Vertical Datum of 1988.

Coastal Flood Hazard Area
An area of special flood hazards extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to storm surge and high-velocity wave action from storms or seismic sources. Sometimes referred to as a Coastal High Hazard Area or V Zone.

Countywide Map
A Flood Map that shows flooding information for the entire geographic area of a county, including the incorporated communities in the county.

Effective Map
Latest Flood Map issued by FEMA, which is in effect as of the date shown in the title box of the Flood Map as "Effective Date," "Revised," or "Map Revised."

Extraterritorial Jurisdiction
Authority of a community to establish land-use zones and issue building permits in areas outside its corporate limits.

Flood Boundary and Floodway Map
Floodplain management map issued by FEMA that shows, based on detailed and approximate analyses, the boundaries of the 100-year and 500-year floodplains and the 100-year floodway.

Flood Hazard Area/ Floodplain/Floodprone Area
Land area subject to inundation by water from any flooding source.

Flood Hazard Boundary Map
Initial insurance map issued by FEMA that identifies approximate areas of 100-year flood hazard in a community.

Flood Insurance Rate Map
Insurance and floodplain management map issued by FEMA that identifies areas of 100-year flood hazard in a community. In some areas, the map also shows base flood elevations and 500-year floodplain boundaries and, occasionally, regulatory floodway boundaries. These maps are also referred to as FIRMs by people who work with them frequently; however, for the purposes of this *Guide*, they are referred to simply as Flood Maps.

Flood Insurance Study
Engineering study performed by FEMA to identify flood hazard areas, flood insurance risk zones, and other flood data in a community.

Floodplain Management
The operation of a program of corrective and preventive measures for mitigating flood damage, including, but not limited to, emergency preparedness plans, flood-control works, and floodplain management regulations.

Floodplain Management Regulations
Zoning ordinances, subdivision regulations, building codes, health regulations, special-purpose ordinances, and other applications of enforcement for mitigation of flood damage.

Map Repository
Community office that stores copies of the Flood Map and Flood Insurance Study report and makes them available for review.

National Flood Insurance Program
Federal program to identify floodprone areas nationwide and make flood insurance available to the owners and lessees of property in the communities that voluntarily participate in the program. The communities participate by adopting and enforcing floodplain management standards that are consistent with Federal regulations.

National Geodetic Vertical Datum (NGVD) of 1929 and North American Vertical Datum (NAVD) of 1988
Standard reference planes established by the Federal Government from which elevations are measured.

Regulatory Floodway
The area defined as the channel of a stream and the adjacent land areas reserved to discharge the 100-year flood without cumulatively increasing the elevation of the 100-year flood more than a designated height.

Riverine Flood Hazard Area
Area subject to inundation by flooding from streams such as rivers and creeks.

Special Flood Hazard Area
Land area subject to inundation by a flood having a 1-percent or greater probability of being equaled or exceeded during any given year (base, or 100-year, flood).

Undeveloped Coastal Barrier
An area, adjacent to the Atlantic or Pacific Oceans, the Gulf of Mexico, or the Great Lakes, where flood insurance will not be available for substantially improved new construction or structures. These areas are protected by law to discourage development in an attempt to preserve dunes, beaches, and wildlife habitats.

Water-Surface Elevation
The height, in relation to NGVD or NAVD (or other local datum where specified), of floods of various magnitudes and frequencies in flood hazard areas.

Inside...
Your Guide to Flood
Maps from FEMA

Federal Emergency Management Agency
500 C Street SW
Washington, DC 20472

YOUR FEMA OFFICES

FEMA REGIONAL OFFICES

Region I
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

FEMA Region I
J. W. McCormack Post Office and Courthouse Building
Room 462
Boston, MA 02109-4595
Phone: (617) 223-9559

Region II
New Jersey, New York, Puerto Rico, and the Virgin Islands

FEMA Region II
26 Federal Plaza
13th Floor
New York, NY 10278-0002
Phone: (212) 225-7200

Region III
Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia

FEMA Region III
Liberty Square Building
105 South Seventh Street
Second Floor
Philadelphia, PA 19106-3316
Phone: (215) 931-5512

Region IV
Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee

FEMA Region IV
3003 Chamblee Tucker Road
Atlanta, GA 30341
Phone: (770) 220-5400

Region V
Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin

FEMA Region V
175 West Jackson Boulevard
Fourth Floor
Chicago, IL 60604-2698
Phone: (312) 408-5200

Region VI
Arkansas, Louisiana, New Mexico, Oklahoma, and Texas

FEMA Region VI
Federal Regional Center
800 North Loop 288
Room 206
Denton, TX 76201-3698
Phone: (817) 898-5127

Region VII
Iowa, Kansas, Missouri, and Nebraska

FEMA Region VII
Federal Office Building
2323 Grand Boulevard
Suite 900
Kansas City, MO 64108-2670
Phone: (816) 283-7002

Region VIII
Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming

FEMA Region VIII
Denver Federal Center
Building 710
Box 25267
Denver, CO 80225-0267
Phone: (303) 235-4830

Region IX
Arizona, California, Hawaii, Nevada, Guam, American Samoa, and the Mariana Islands

FEMA Region IX
Presidio of San Francisco
Building 105
San Francisco, CA 94129-7250
Phone: (415) 923-7177

Region X
Alaska, Idaho, Oregon, and Washington

FEMA Region X
Federal Regional Center
130 228th Street SW
Bothell, WA 98021-9796
Phone: (206) 487-4682